UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 30 2014

REPLY TO THE ATTENTION OF:

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mike D. Bechtol
Director, Environmental
Wood River Refinery
900 S. Central Ave.
Roxana, Illinois 62084

Re: Notice of Violation and Finding of Violation
WRB Refining LP
Wood River Refinery
Roxana, Illinois

Dear Mr. Bechtol:

The U.S. Environmental Protection Agency is issuing the enclosed Notice of Violation and Finding of Violation (NOV/FOV) to WRB Refining LP's Wood River Refinery ("facility" or "you") under Section 113(a)(1) of the Clean Air Act, 42 U.S.C. § 7413(a)(1). We find that you have violated the Clean Air Act ("the Act") and certain associated federal and state pollution control regulations.

Section 113 of the Act gives us several enforcement options. The options include issuing an administrative compliance order, issuing an administrative penalty order and bringing a judicial civil or criminal action.

Section 113 of the Act also provides you with the opportunity to request a conference with us to discuss the violations alleged in the NOV/FOV. This conference will provide you a chance to present information on the identified violations, any efforts you have taken to comply, and the steps you will take to prevent future violations. In addition, in order to make the conference more productive, we encourage you to submit to us information responsive to the NOV/FOV prior to the conference date.

Please plan for the facility's technical and management personnel to take part in these discussions. You may have an attorney represent and accompany you at this conference.

The EPA contact in this matter is Gregory Gehrig. You may call him at (312) 886-4434 to request a conference. You should make the request within 10 calendar days following receipt of this letter. We should hold any conference within 30 calendar days following receipt of this letter.

Sincerely,

George T. Czerniak
Director
Air and Radiation Division

Enclosure

cc: Eric Jones, Illinois Environmental Protection Agency

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:	)	
	)	
WRB Refining LP	)	**NOTICE OF VIOLATION and**
Wood River Refinery	)	**FINDING OF VIOLATION**
Roxana, Illinois	)	**EPA-5-14-IL-04**
	)	
	)	
Proceedings Pursuant to	)	
the Clean Air Act	)	
42 U.S.C. §§ 7401 et seq.	)	

NOTICE AND FINDING OF VIOLATION

WRB Refining LP owns and operates a petroleum refinery located at 900 S. Central Ave. in Roxana, Illinois, known as the Wood River Refinery (facility or refinery). WRB Refining LP is a limited partnership jointly owned by Phillips 66 and Cenovus Energy Inc. Phillips 66 is the operator and managing partner of WRB Refining LP.

The U.S. Environmental Protection Agency is sending this Notice of Violation and Finding of Violation (NOV/FOV or Notice) to notify the refinery that we have found violations of the Clean Air Act (CAA or Act) and associated federal and state regulations at 10 of the 12 flares used at the facility to control air pollution emissions generated from refinery operations. In the operation of these 10 flares, the refinery has violated certain General Provisions of both the New Source Performance Standards, 40 C.F.R. Part 60 (NSPS), and the National Emission Standards for Hazardous Air Pollutants for Source Categories, 40 C.F.R. Part 63 (NESHAPs), as well as the NSPS for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, 40 C.F.R. Part 60, Subparts VV and VVa. WRB has also emitted pollutants at these flares in excess of emissions allowed under the Illinois State Implementation Plan (SIP).

I. Statutory and Regulatory Background

This NOV/FOV is based on the following statutory and regulatory provisions:

Clean Air Act

1. The Clean Air Act is designed to protect and enhance the quality of the nation's air so as to promote the public health and welfare and the productive capacity of its population. Section 101(b)(1) of the Act, 42 U.S.C. § 7401(b)(1).

Section 111 of the Act, New Source Performance Standards

2. Section 111(b) of the Act, 42 U.S.C. § 7411(b), requires EPA to publish a list of categories of stationary sources and, within a year after the inclusion of a category of stationary sources in the list, to publish proposed regulations establishing Federal standards of performance for new sources within the source category.

3. Section 111(f) of the Act, 42 U.S.C. § 7411(f), requires the promulgation of standards of performance for new stationary sources.

4. Section 111(e) of the Act, 42 U.S.C. § 7411(e), prohibits the operation of a new source in violation of any applicable standard of performance.

NSPS General Provisions, 40 C.F.R. Part 60, Subpart A

5. EPA proposed General Provisions to the New Source Performance Standards (NSPS Subpart A) on August 17, 1971. *See* 36 Fed. Reg. 15704. EPA promulgated NSPS Subpart A on December 23, 1971. *See* 36 Fed. Reg. 24877. The subpart has been subsequently amended. NSPS Subpart A is codified at 40 C.F.R. §§ 60.1 – 60.19.

6. NSPS Subpart A at 40 C.F.R. § 60.11(d) requires that "at all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions."

7. NSPS Subpart A at 40 C.F.R. § 60.18(c)(3)(ii) requires that flare owner/operators only combust gases that meet certain heat content specifications. For steam assisted and air assisted flares, the minimum heat content for the gases being combusted is 300 BTU/scf. For non-assisted flares, the minimum heat content for the gases being combusted is 200 BTU/scf.

NSPS for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (SOCMI), 40 C.F.R. Part 60, Subpart VV

8. On October 18, 1983, EPA promulgated the Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006 (NSPS Subpart VV). *See* 48 Fed. Reg. 48335. NSPS Subpart VV has been subsequently amended. The subpart is codified at 40 C.F.R. §§ 60.480 – 60.489.

9. NSPS Subpart VV at 40 C.F.R. § 60.482-10(d) provides that flares used to comply with Subpart VV must comply with 40 C.F.R. § 60.18 of Part 60, Subpart A, General Provisions.

10. NSPS Subpart VV at 40 C.F.R. § 60.482-10(e) provides that owners of control devices, including flares, that are used to comply with the requirements of Subpart VV, "shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs."

NSPS for Equipment Leaks of VOC in SOCMI for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006, 40 C.F.R. Part 60, Subpart VVa

11. On November 16, 2007, EPA promulgated the Standards of Performance for Equipment Leaks of VOC in the SOCMI for which Construction, Reconstruction, or Modification Commenced After November 7, 2006 (NSPS Subpart VVa). *See* 72 Fed. Reg. 64883. NSPS Subpart VVa has been subsequently amended. The subpart is codified at 40 C.F.R. §§ 60.480a - 60.489a.

12. NSPS Subpart VVa at 40 C.F.R. § 60.482-10a(d) provides that flares used to comply with Subpart VVa must comply with 40 C.F.R. § 60.18 of Part 60, Subpart A, General Provisions.

13. NSPS Subpart VVa at 40 C.F.R. § 60.482-10a(e) provides that owners of control devices, including flares, that are used to comply with the requirements of Subpart VVa, "shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs."

NSPS for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006, 40 C.F.R. Part 60, Subpart GGGa

14. On November 16, 2007, EPA promulgated the final standards of performance for equipment leaks of volatile organic compounds (VOC) in the petroleum refining industry for which construction, reconstruction, or modification commenced after November 7, 2006 (NSPS Subpart GGGa). *See* 72 Fed. Reg. 64883. Subpart GGGa has been subsequently amended. The subpart is codified at 40 C.F.R. §§ 60.590a – 60.593a.

15. Pursuant to 40 C.F.R. § 60.592a(a), each owner or operator subject to Subpart GGGa must comply with 40 C.F.R. Part 60, Subpart VVa, at §§ 60.482-1a to 60.482-10a. Section 60.482-10a(d) requires compliance with Part 60, Subpart A, § 60.18, which sets forth requirements for flares, including exit velocity, net heating value of gas being flared, operation with no visible emissions, and monitoring to ensure compliance with design. Further, because Subpart GGGa is a NSPS subpart, the general provisions of Subpart A apply to sources subject to Subpart GGGa. Therefore, 40 C.F.R. § 60.11(d), the provision that requires compliance with good air pollution control practices for minimizing emissions, applies to sources subject to Subpart GGGa.

Section 112 of the Act, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories

16. Section 112(b) of the Act, 42 U.S.C. § 7412(b) lists 188 Hazardous Air Pollutants (HAPs) that cause adverse health or environmental effects.

17. Section 112(d)(1) of the Act, 42 U.S.C. § 7412(d), requires EPA to promulgate regulations establishing emissions standards for each category or subcategory of major and area sources of HAPs that are listed for regulation pursuant to subsection (c) of Section 112.

18. Section 112(d)(2) of the Act requires that emission standards promulgated under Section 112(d)(1) require "the maximum degree of reduction in emissions of the hazardous air pollutants . . . that the Administrator, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable for new or existing sources in the category or subcategory to which such emission standard applies . . ." (hereinafter, "MACT").

NESHAP for Source Categories, General Provisions, 40 C.F.R. Part 63, Subpart A

19. On March 16, 1994, U.S. EPA promulgated the General Provisions to Part 63 at 40 C.F.R. Part 63, Subpart A, §§ 63.1 - 63.16. *See* 59 Fed. Reg. 12408. The provisions have been subsequently amended.

20. 40 C.F.R. § 63.1(a)(4)(i) provides that each standard in 40 C.F.R. Part 63 "must identify explicitly whether each provision in this subpart A is or is not included in such relevant standard."

21. 40 C.F.R. § 63.6(e)(1)(i) requires that "[a]t all times, including periods of startup, shutdown, and malfunction, the owner or operator must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions."

22. 40 C.F.R. § 63.11(b)(6)(ii) requires that flare owner/operators only combust gases that meet certain heat content specifications. For steam assisted and air assisted flares, the minimum heat content for the gases being combusted is 300 BTU/scf. For non-assisted flares, the minimum heat content for the gases being combusted is 200 BTU/scf.

NESHAP for Petroleum Refineries, 40 C.F.R. 63, Subpart CC

23. EPA promulgated National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries (the Refinery MACT) on August 18, 1995. *See* 60 Fed. Reg. 43244. The subpart has been subsequently amended. The Refinery MACT is codified at 40 C.F.R. §§ 63.640 - 63.656.

24. 40 C.F.R. § 63.640(c) provides that for "the purpose of this subpart, the affected source shall comprise all emission points, in combination," listed at 40 C.F.R. § 63.640(c)(1) through (c)(7). These emission points include miscellaneous process vents and all equipment leaks.

25. 40 C.F.R. § 63.648(a) provides that "[e]ach owner or operator of an existing source subject to the provisions of this subpart shall comply with the provisions of 40 C.F.R. Part 60, Subpart VV . . .."

26. Table 6 to the Refinery MACT, titled "General Provisions Applicability to Subpart CC," specifically provides that Sections 63.6(e) and 63.11(b) (among others) of the General Provisions apply to affected sources under the Refinery MACT (except for "Group 2 emission points").

Illinois State Implementation Plan (Illinois SIP)

27. The Illinois SIP at Illinois Administrative Code (IAC) §§ 219.301 and 219.302 prohibit the release of volatile organic material (VOM) waste gas streams containing more than 8 pounds per hour (lb/hr) organic material unless the waste stream is reduced to less than 10 parts per million (ppm) of VOM, or treated with a device that achieves a combustion efficiency of 85% or more. 17 Ill. Reg. 16918, September 27, 1993.

II. Flare Efficiency Studies

28. In July 1983, the EPA released report "EPA 600/2-83-052," titled *Flare Efficiency Study* (1983 Flare Study). This study, partially funded by EPA and the Chemical Manufacturers Association, included various tests to determine the combustion efficiency and hydrocarbon destruction efficiency of flares under a variety of operating conditions. Certain tests were conducted on a steam-assisted flare provided by John Zink Company. The tests performed included a wide range of steam flows and steam-to-vent gas ratios. The data collected showed decreasing combustion efficiencies when the steam-to-vent gas ratio was above 3.5. The tests showed the following efficiencies at the following steam-to-vent gas (S/VG) ratios:

Pounds of Steam to One Pound of Vent Gas	Combustion Efficiency (%)
3.45	99.7
5.67	82.18
6.86	68.95

The report concluded that excessive steam-to-vent gas ratios caused steam quenching of the flame during the tests, which resulted in lower combustion efficiency.

The EPA has identified other publicly available studies and EPA reports that evaluate how flare combustion efficiency is affected by steam addition. The conclusions of these studies support those of EPA 600/2-83-052. In particular, several recent studies have been conducted with the use of passive Fourier transform infrared spectroscopy that verify the conclusion reached in EPA 600/2-83-052.

29. For air assisted flares, EPA, technical, and flare manufacturer documents require that an appropriate amount of air be mixed with the vent gases. As the vent gas flow increases, the air supplied for combustion and mixing must also increase. However, excess air can extinguish combustion. Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources (aka AP-42; Fifth Edition, January 1995, EPA) states in Chapter 13.5, 'The degree of combustion depends largely on the rate and extent of fuel-air mixing.'

III. Factual Allegations

30. WRB Refining LP (WRB) owns and operates the refinery. WRB is a limited partnership jointly owned by Phillips 66 and Cenovus Energy Inc. Phillips 66 is a Delaware corporation located in Houston, Texas. Cenovus Energy Inc. is a Canadian corporation located in Calgary, Canada. Phillips 66 is the operator and managing partner of WRB. The refinery operates 12 flares at the facility for the purpose of controlling air pollution emissions generated from refinery operations.

31. By letters dated August 9, 2013, September 13 and June 13, 2014, WRB provided information and documentation to EPA in response to EPA's May 3, 2013 information request. The information included a list of its flares identifying applicable regulations, flare operating documents and data for the period from January 2006 to May 2013. Although specifically requested in the May 3, 2013 information request, WRB only produced flare manufacturers' operating manuals for 3 of the 12 flares (Coker North Flare, Hydrogen Plant 2 Flare and North Property Flare). The flares and certain applicable regulations, as provided by WRB, are set forth below:

Flare	Applicable Regulation		
	NSPS GGGa	NESHAP CC	35 IAC 219.301/302
a. Alkylation Flare	X	X	X
b. Aromatics North Flare	X	X	X
c. Aromatics South Flare	X	X	X
d. Coker North Flare	X	X	X
e. Distilling Flare	X	X	X
f. Distilling West Flare	X	X	X
g. Hydrogen Plant 1 Flare			X
h. Hydrogen Plant 2 Flare	X	X	X
i. Low Sulfur Gasoline (LSG) Flare	X	X	X
j. North Property (NP) Flare	X	X	X
k. VOC Flare and Spare			X

32. WRB produced data that indicate that the refinery supplied excess steam to its flares. The refinery reduced the combustion efficiency of the following flares on a consistent basis below 85% and released a waste gas stream to the environment with an organic material concentration greater than 10 ppm and at a rate exceeding 8 lb/hr. Information provided by the 1983 Flare Study indicates this prohibited condition occurs when the S/VG ratio exceeds 5.67. PFTIR testing at refineries shows that this efficiency occurs at even lower S/VG ratios. WRB operated its flares with the S/VG ratio exceeding 5.67 for the period of July 1, 2009 through May 9, 2013 as shown below:

a.	Alkylation Flare	6,267 hours
b.	Aromatics North Flare	18 hours
c.	Aromatics South Flare	46 hours
d.	Coker North Flare	72 hours
e.	Distilling Flare	34 hours
f.	Hydrogen Plant 2 Flare	14,151 hours
g.	LSG Flare	31,844 hours
h.	NP Flare	8,144 hours

33. WRB produced data that indicate the NHV values for its flares during the operating period of July 1, 2009 through May 9, 2013. At various times during that period the NHV values were below the requirement for steam-assisted or air-assisted flares of 300 BTU/scf as specified in 40 C.F.R. § 60.18(c)(3)(ii) and 40 C.F.R. § 63.11(b)(6)(ii). The refinery operated its flares below the required NHV value of 300 BTU/scf for the period of July 1, 2009 through May 9, 2013 as shown below:

a.	Alkylation Flare	237 hours
b.	Aromatics North Flare	2 hours
c.	Aromatics South Flare	21 hours
d.	Coker North Flare	25 hours
e.	Hydrogen Plant 2 Flare	258 hours

34. WRB produced data that indicate that the refinery failed to vary the addition of air to match the variations in vent gas flow at the Distilling West Flare from July 1, 2009 to May 9, 2013.

IV. Alleged Violations

NSPS

35. The refinery's failure to possess and implement flare specific or generally available documents that prescribe or recommend the amount of steam or air to add to the flare is a failure to meet the requirement to use good air pollution control practices to minimize emissions as required by 40 C.F.R. § 60.11(d). As described in Paragraphs 6, 15, 28, 29, 31, 32, and 34, these violations occurred at the following flares:

a. Alkylation Flare
b. Aromatics North Flare

c. Aromatics South Flare
d. Coker North Flare (manual produced but combustion efficiency below 85%)
e. Distilling Flare
f. Distilling West Flare
g. Hydrogen Plant 2 Flare (manual produced but combustion efficiency below 85%)
h. LSG Flare
i. NP Flare (manual produced but combustion efficiency below 85%)

36. The refinery's failure to possess and implement flare specific or generally available documents that prescribe or recommend the amount of steam or air to add to the flare is a failure to meet the requirement to monitor the control devices to ensure that they are operated and maintained in conformance with their designs as required by 40 C.F.R. § 60.482 - 10a(e). As described in Paragraphs 13, 15, and 31, these violations occurred at the following flares:

a. Alkylation Flare
b. Aromatics North Flare
c. Aromatics South Flare
d. Distilling Flare
e. Distilling West Flare
f. LSG Flare

37. The refinery's failure to operate certain flares at or above specified net heating values is a failure to meet the requirements of 40 C.F.R. § 60.18(c)(3)(ii). As described in Paragraphs 7 and 33, these violations occurred at the following flares:

a. Alkylation Flare
b. Aromatics North Flare
c. Aromatics South Flare
d. Coker North Flare
e. Hydrogen Plant 2 Flare

NESHAP for Source Categories

38. The refinery's failure to possess and implement flare specific or generally available documents that prescribe or recommend the amount of steam or air to add to the flare is a failure to meet the requirement to use good air pollution control practices to minimize emissions as required by 40 C.F.R. § 63.6(e)(1)(i). As described in Paragraphs 21, 26, 28, 29, 31, 32, and 34, these violations occurred at the following flares:

a. Alkylation Flare
b. Aromatics North Flare
c. Aromatics South Flare
d. Coker North Flare (manual produced but combustion efficiency below 85%)
e. Distilling Flare
f. Distilling West Flare
g. Hydrogen Plant 2 Flare (manual produced but combustion efficiency below 85%)
h. LSG Flare

i. NP Flare (manual produced but combustion efficiency below 85%)

39. The refinery's failure to operate certain flares at or above specified net heating values is a failure to meet the requirements of 40 C.F.R. § 63.11(b)(6)(ii). As described in Paragraphs 22, 26, 31, and 33, these violations occurred at the following flares:

a. Alkylation Flare
b. Aromatics North Flare
c. Aromatics South Flare
d. Coker North Flare
e. Hydrogen Plant 2 Flare

Illinois SIP Provisions

40. The refinery's failure to operate certain flares at a combustion efficiency at or above 85% is a failure to meet the requirements of the Illinois SIP at IAC §§ 219.301 and 219.302. As described in Paragraphs 27, 28, 29, 31, 32, and 34, these violations occurred at the following flares:

a. Alkylation Flare
b. Aromatics North Flare
c. Aromatics South Flare
d. Coker North Flare
e. Distilling Flare
f. Hydrogen Plant 2 Flare
g. LSG Flare
h. NP Flare

V. Environmental Impact of Violations

41. The above-described violations have caused or can cause excess emissions of volatile organic compounds (VOC) and/or hazardous air pollutants (HAP). VOC cause ground level ozone, which can irritate the human respiratory system and reduce lung function.

VI. Enforcement Provisions

42. Sections 113(a)(1) and (3) of the Act, 42 U.S.C. § 7413(a)(1) and (3), provide that the Administrator may bring a civil action in accordance with Section 113(b) of the Act, 42 U.S.C. § 7413(b), whenever, on the basis of any information available to the Administrator, the Administrator finds that any person has violated or is in violation of any requirement or prohibition of Title I of the Act, *inter alia*, the NSPS requirements of Section 111 of the Act, 42 U.S.C. § 7411, and any regulation issued thereunder; the NESHAP requirements of Section 112 of the Act, 42 U.S.C. § 7412, and any regulation issued thereunder; or the provisions of the Illinois SIP.

6/30/14
Date

George T. Czerniak
Director
Air and Radiation Division

CERTIFICATE OF MAILING

I, Loretta Shaffer, certify that I sent a Notice and Finding of Violation, No. EPA-5-14-IL-04, by Certified Mail, Return Receipt Requested, to:

Mike D. Bechtol
Director, Environmental
Wood River Refinery
900 S. Central Ave.
Roxana, Illinois 62084

I also certify that I sent copies of the Notice of Violation and Finding of Violation by first-class mail to:

Eric Jones, Manager
Bureau of Air, Compliance and Enforcement Section
Illinois Environmental Protection Agency
P.O. Box 19506
Springfield, Illinois 62794

On the 2 day of July 2014.

Loretta Shaffer
Program Technician
AECAB, PAS

CERTIFIED MAIL RECEIPT NUMBER: 7001 0320 0006 0185 9914